Evaluation of outer dense fiber-1 and -2 protein expression in asthenozoospermic infertile men

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Abstrak

Most of male infertility are caused by defect in sperm motility (asthenozoospermia). The molecular mechanism of low sperm motility in asthenozoospermic patients has not been fully understood. Sperm motility is strongly related to the axoneme structure which is composed of microtubules and supported by outer dense fiber (ODF) and fibrous sheath (FS) protein. The objective of this study was to characterize the ODF (ODF1 and ODF2) expression in asthenozoospermic infertile male and control normozoospermic fertile male. Asthenozoospermic samples (n=18) were collected from infertile patients at andrology lab, Cipto Mangunkusumo Hospital Jakarta and control were taken from normozoospermic fertile donor (n=18). After motility analyses by computer assisted sperm analysis (CASA), semen were divided into two parts, for Western blot and for immunocytochemistry analysis. Antibody against ODF1 and ODF2 protein were used in both analyses. Analysis of ODF1 protein expression showed bands with molecular weight of -30 kDa and ODF2 -85 kDa. The mean band intensity of ODF1 and ODF2 protein were lower in the asthenozoospermic group (AG) compared to normozoospermic group (NG). Moreover, both ODF proteins were less intense and less localized in the AG than NG. Sperm motility was lower in AG, compared to control NG, i.e.average path velocity (VAP) = 32.07 +-7.03 vs 37.58 +-8.73=0.455; straight line velocity (VCL) = 45.68+-7.91 vs 55.55 +-16.40 p=0.099. There is down-regulation of ODF1 and ODF2 protein expression and less-compact localization in AG sperm compared to the NG. These changes might have caused disturbances in the sperm motility as observed in this study.